

REMARKS

Claims 22-32 are pending in the present application.

Claim Rejections-35 U.S.C. 112

Claim 31 has been rejected under 35 U.S.C. 112, second paragraph, as being indefinite. This rejection is respectfully traversed for the following reasons.

The Examiner has alleged that it is unclear how the deviation of the orifice diameter in claim 31 is determined. The Examiner has asserted that "a longitudinal axis" could be any number of axes depending on where they are drawn, and that in such a case, the percentages claimed would correspond to different values for each axis, causing the actual values to be indefinite. Applicants respectfully disagree for the following reasons.

Claim 31 features that "deviation of the orifice diameter along a longitudinal axis of the orifice ranges from +/- 1% to +/- 10%, whereby a substantially homogeneous electrical field is provided at a center of the orifice".

Claims 31 thus features that the orifice diameter has a longitudinal axis, and that the deviation of the orifice diameter at this longitudinal axis is within the stated range. Claim 31 does not feature that the stated deviation of the orifice diameter is for a number of axes. That is, a longitudinal axis is claimed. Since claim 31 does not feature plural axes, and since the percentages as claimed correspond to the longitudinal axis, the scope of claim 31 should be clear. Accordingly, Applicants respectfully submit that

claim 31 is in compliance with 35 U.S.C. 112, second paragraph, and thus respectfully urge the Examiner to withdraw this rejection. Any further amendment of claim 31 would unnecessarily narrow claim scope.

Claim Rejections-35 U.S.C. 103

Claims 22-29, 31 and 32 have been rejected under 35 U.S.C. 103(a) as being unpatentable over the Hanss et al. reference (U.S. Patent No. 4,835,457) in view of the Graham reference (U.S. Patent No. 6,111,398). This rejection is respectfully traversed for the following reasons.

Claim 22 features an electrical impedance cell sizing apparatus for characterizing particles suspended in a liquid. The mixing chamber and collection chamber are featured as separated by a polymer membrane containing an orifice for passage of particles therebetween, wherein a diameter of the orifice is in a range from 10 μm to 1000 μm .

In contrast, as emphasized beginning on page 8 of the Amendment dated September 25, 2008, the Hanss et al. reference as relied upon by the Examiner discloses an apparatus and process for determining the deformability of red corpuscles in blood, not a cell sizing apparatus. As described generally beginning in column 3, line 13 of the Hanss et al. reference, the duration of the generated electric pulse is substantially equal to that of the passage of the red corpuscles through the pores of the filter. This duration is called transit time of the red corpuscles and provides a measure

of the rigidity or deformability of the red corpuscles, so that normal red blood corpuscles which are readily deformable may thus be distinguished from rigid, abnormal red blood corpuscles. That is, a measure of transit time (deformability) through the small pore is provided, not cell size. It should thus be readily clear that the Hanss et al. reference is not directed to an electrical impedance cell sizing apparatus as featured in claim 22.

With further regard to this rejection, the Examiner has acknowledged that the Hanss et al. reference does not disclose an orifice diameter in a range of 10 μm to 1000 μm , as would be necessary to meet the further features of claim 22. In an effort to overcome this acknowledged deficiency of the primarily relied upon Hanss et al. reference, the Examiner has alleged that it would have been obvious in view of the secondarily relied upon Graham reference to modify the device of the Hanss et al. reference to have orifice diameter as featured in claim 22. Applicants respectfully disagree for the following reasons.

As shown in Fig. 2 of the Hanss et al. reference, the apparatus for determining the deformability of red corpuscles includes filtering membrane 5 having a very limited number of pores. As described beginning in column 5, line 11 of the Hanss et al. reference, the filtering membrane used is a polycarbonated membrane.

In contrast, column 3, line 15 of the Graham reference as secondarily relied upon by the Examiner is descriptive of a various conduit diameters, not specifically the diameter of an orifice in a polycarbonated membrane. As shown in prior art Fig. 1 of the Graham reference, conduit 10 is provided in wafer W, not a membrane. Likewise,

volumeter assembly 50 as shown in Fig. 6 of the preferred embodiment of the Graham reference is described beginning in column 25, line 36 as including element 51 that is preferably made of a dielectric such as ruby, sapphire, alumina, beryllia, synthetic quartz, a conductive glass, a conductive ceramic, or a type of conductive polymer or plastic. Volumeter assembly 50 of the Graham reference having a conduit diameter is not specifically described as a membrane. Applicants respectfully submit that one of ordinary skill would have no motivation to modify the multipore membrane used in the apparatus for determining deformability of red corpuscles of the Hanss et al. reference in view of the volumeter assembly (non-membrane) of the Graham reference. Applicants therefore further respectfully submit that the electrical impedance cell sizing apparatus of claim 22 would not have been obvious in view of the prior art as relied upon by the Examiner taken singularly or together, and that this rejection of claims 22-29, 31 and 32 is improper for at least these reasons.

With further regard to this rejection, in the Response to Arguments section beginning on page 2 of the current Office Action dated December 22, 2008, the Examiner has acknowledged that the size of the orifices in the Hanss et al. reference and the Kiesewetter et al. reference have been chosen to be smaller than the diameter of a typical red blood cell. The Examiner has however further asserted that the courts "have held that apparatus claims must be structurally distinguishable from the prior art in terms of structure, not function".

Applicants however respectfully submit that the electrical impedance cell sizing apparatus of claim 22 is structurally different than the apparatus for determining deformability of red corpuscles of the Hanss et al. reference. That is, the diameter of the orifice in the polymer membrane of the electrical impedance cell sizing apparatus of claim 22 is a range of 10 μm to 1000 μm . In contrast, the average diameter of the pores of the membrane in the device of the Hanss et al. reference is about 5 μm . That is, the pores of the Hanss et al. device are at least half the diameter of the orifice of the electrical impedance cell sizing apparatus of claim 22. Moreover, the Kiesewetter et al. reference is no longer relied upon as a basis of rejection.

The Examiner has further asserted on page 3 of the Response to Arguments section of the current Office Action that one of ordinary skill would have realized that the apparatus of the Hanss et al. reference functions due to elasticity and deformability of red corpuscles passing through the membrane, and would have modified the membrane orifice size to accommodate transmission of any size particle which may be incapable of deforming as much. Applicants however respectfully submit that the Hanss et al. device is specifically designed for determining the deformability of red corpuscles, and not for determining cell size distribution.

With further regard to this rejection, in the paragraph bridging pages 3-4 of the Response to Arguments section of the current Office Action, the Examiner has relied on page 7, lines 16-17 of the specification of the present application as filed to argue that the apparatus of the Hanss et al. reference is capable of testing the transmission of

smaller particles. Applicants however respectfully submit that the Examiner's reliance upon the disclosure of the present application as the basis of a prior art rejection against the claims of the present application is clearly improper.

Accordingly, Applicants respectfully submit that the electrical impedance cell sizing apparatus of claim 22 would not have been obvious in view of the prior art as relied upon by the Examiner taken singularly or together, and that this rejection of claims 22-29, 31 and 32, is improper for at least these additional reasons.

Claim 30 has been rejected under 35 U.S.C. 103(a) as being unpatentable over the Hanss et al. reference and the Graham reference, in further view of the Berndtsson reference (WO99/01742). Applicants respectfully submit that the Berndtsson reference as secondarily relied upon does not overcome the above noted deficiencies of the primarily relied upon prior art, and that this rejection of claim 30 is improper for at least these reasons.

Conclusion

Applicants respectfully request the Examiner to reconsider and withdraw the corresponding rejections, and to pass the claims of the present application to issue, for at least the above reasons.

In the event that there are any outstanding matters remaining in the present application, please contact Andrew J. Telesz, Jr. (Reg. No. 33,581) at (571) 283-0720 in the Washington, D.C. area, to discuss these matters.

Pursuant to the provisions of 37 C.F.R. 1.17 and 1.136(a), the Applicants hereby petition for an extension of one (1) month to April 22, 2009, for the period in which to file a response to the outstanding Office Action. The required small entity fee of \$65.00 should be charged to Deposit Account No. 50-0238.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment for any additional fees that may be required, or credit any overpayment, to Deposit Account No. 50-0238.

Respectfully submitted,

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